**Question 2**

Zoe owns a house cleaning business. She has created a relational database to store information on her clients, her staff and their house visits.

Zoe’s relational database is organised using three tables as shown below.

|  |  |  |
| --- | --- | --- |
| Clients | Staff | House Visits |
| Client ID | Staff ID | Visit Date |
| Client Name | Staff Name | Visit Time |
| Client Address | Staff Address | Duration |
| Contact Number | Date of Birth | Staff ID\* |
|  | Hourly Rate | Client ID\* |
|  | Contact Number |  |
|  |  |  |

a) Describe the relationships that exist between the tables. (2)

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b) From the three tables, identify one surrogate key field and one compound key field. (2)

Surrogate Key: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Compound Key: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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c) While using a new staff member’s job application form to enter their details into the ‘Staff’ table, Zoe is given an error message: “This date of birth is not valid”. Zoe entered the staff member’s date of birth as it was written on the application form; ‘12th December 1994’.

Explain why the database displayed an error message when Zoe entered the date of birth. (2)

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d) Assuming the Client ID field is a four digit integer, describe how this field could be validated. (2)

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e) A report is produced showing the house visits for the client shown below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Customer** | Mr P Kaye | **Client ID** | 2375 |
|  | 95 Comedy Lane |  |  |
|  |  |  |  |
| **House Visits** | | | |
| **Date** | **Duration** | **Staff ID** | **Hourly Rate (£)** |
| 07/01/2017 | 90 | 002 | 8.50 |
| 14/01/2017 | 90 | 002 | 8.50 |
| 21/01/2017 | 120 | 003 | 9.00 |
| 28/01/2017 | 60 | 001 | 10.00 |
| 16/02/2017 | 120 | 001 | 10.00 |
|  |  |  |  |
|  |  | **Total (£)** | 73.50 |

This report is based on a query. State a list of the tables and fields that would be used in this query and any criteria that would be used to select the above data. (4)

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d) The report includes a total cost of 73.50 after the five house visits.   
Describe how the total cost can be added to the report. (4)

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e) Forms allow a user-friendly means of inputting data into one or more tables in a database.  
Using the space below, design a form that could be used to add a new client to the database. (3)